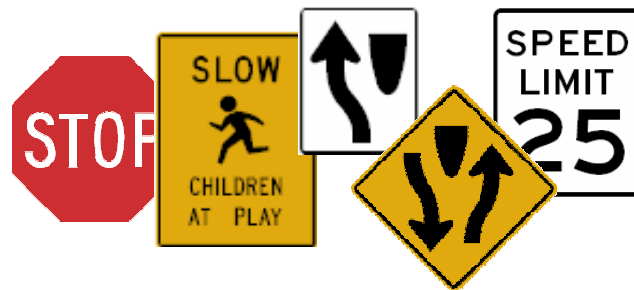




Citizen Initiated Traffic Calming Manual

January 2007



**GILSON ENGINEERING, INC.
CONSULTING ENGINEERS AND SURVEYORS**

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Section 1 – Introduction

Numerous traffic studies show that people in Utah drive above the posted speed limit. Across the United States this trend appears to be on the rise. In some regards it may be directly attributed to our fast paced lifestyles and the need to be in two places at the same time. However, when this trend spreads to local residential streets, it compromises our sense of neighborhood by creating noise, pollution and unsafe roadway environments.

Cottonwood Heights' residents are taking responsibility for quality of life issues in their own neighborhoods by learning that neighborhood action can help address speeding and cut-through traffic related problems. The city can be a supporting partner to help neighborhoods devise creative and workable solutions to ensure and preserve our safe and peaceful streets.

The Definition of Traffic Calming

Traffic calming is more than just slowing down vehicles. It is the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street use.

What Can Traffic Calming do for Residents of Cottonwood Heights?

Speeding and other unsafe driving practices on residential streets have become an increasing concern to city residents as well as government agencies charged with ensuring traffic safety and neighborhood livability.

Our streets are not just for cars. They are also used for other activities such as walking, running, and bicycling. Traffic calming measures encourage automobile drivers to operate with consideration for the safety of other individuals using the roadway. Traffic calming measures can reduce excessive speed, noise, cut-through traffic, traffic volumes, and numerous other impacts, which in turn improve the quality of the neighborhood. Some communities have observed secondary benefits from safe attractive streets, including community interaction through social activities, and promoting safety through increased usage of alternative transportation modes (e.g. walking, running, and bicycling).

Application of Traffic Calming Devices

Traffic calming can help reduce some of the undesirable effects of motor vehicle traffic on neighborhood streets. In order to achieve the desired results, it is important that the appropriate traffic calming measures be implemented for the identified problem. It is also important that this occur on the correct classification of street. The hierarchical classification of streets includes arterials, major collectors, minor collectors, and local streets.

Traffic calming is typically implemented only on the lower volume roads and streets, including local streets. Traffic calming methodologies are cautiously implemented on minor collectors. Only specific traffic calming measures that are discussed below are used on major collectors and arterial streets due to the relatively higher traffic volumes, speeds and intended purposes of these types of roads. Traffic calming measures available for use on high volume roads include several forms of intersection control including roundabouts, median islands, lane narrowing via re-striping, and chokers. These measures are utilized to reduce the available roadway width and subsequently lower traffic speeds.

Figure 1-1 (Page 3) identifies the arterials, major and minor collectors and local streets in Cottonwood Heights.

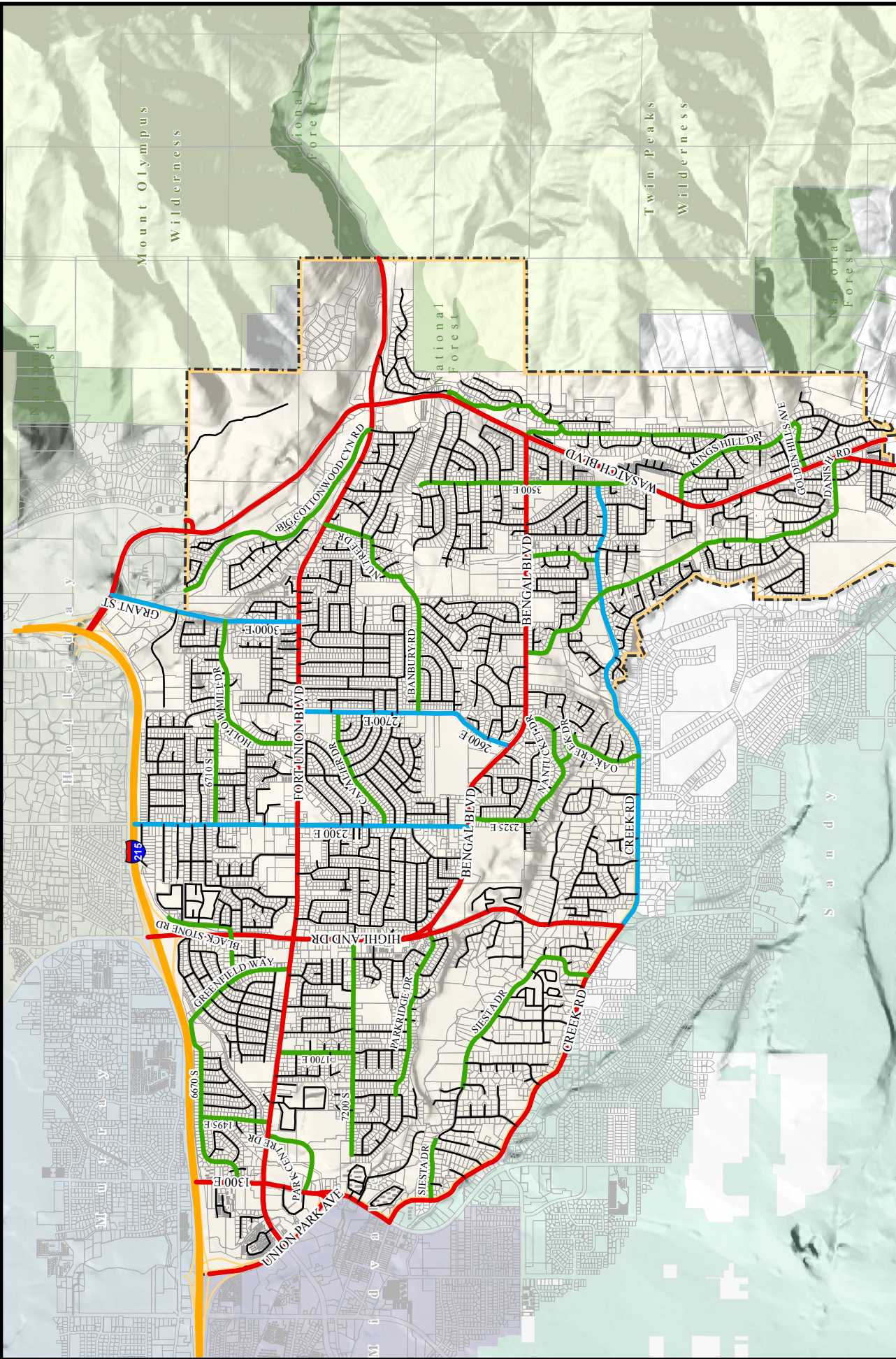
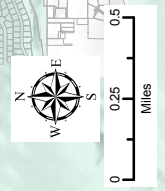


Figure 1.1
Roadway
Classification



- Legend**
- City Boundary
 - Parcels
 - National Forest
 - Wilderness Area
 - Major Collector
 - Minor Collector
 - Local Collector
 - Freeway
 - Freeway Interchange
 - Arterial



Section 2 – Traffic Calming Measures

This section provides an overview of common traffic calming measures. Traffic calming is based on engineering principles, but the application is an art. What works in one neighborhood might not work in another. Many problems can be addressed, in part, by simple solutions such as striping or better visibility of regulatory signs.

If a study is warranted, the city engineer conducts a traffic study and determines what percentages of vehicles are traveling over the speed limit. This will help identify the severity of the problem and help the city select the best traffic calming measure for the neighborhood in question. Feedback from the neighborhood is necessary. Some of the traffic calming measures in this booklet will be evaluated to determine which solutions will work best for the neighborhood. At this point in the process, it is very important to have significant neighborhood support for the prioritization and implementation of traffic calming measures

It should be noted that every street in the city may have traffic violations at some point. If there are periodic violations, increased enforcement may be adequate to resolve the problem. Before any traffic calming measure will be considered, police enforcement must be carried out to its fullest extent. Police enforcement can be performed by the use of patrol officers monitoring traffic speeds, or the use of speed monitoring signs. Enforcement can only be effective to a certain point. It is not economically feasible to have it around the clock, and many times traffic speed is only reduced when police are present.

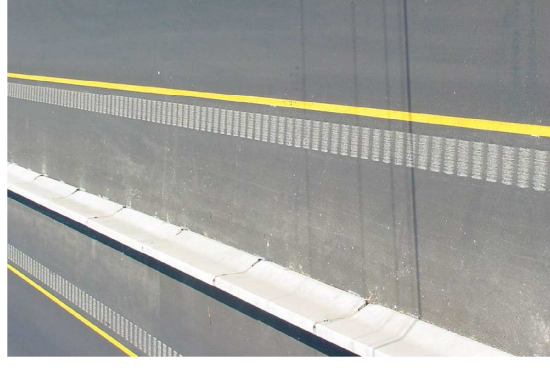
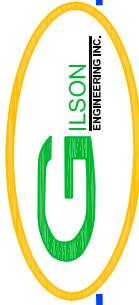
If traffic violations involve a large percentage of vehicles, there may be some roadway design issues that need to be addressed. The procedures from this citizen initiated program will help identify those problems. Each neighborhood is unique and there is no single solution to fit all traffic calming problems. With proactive support from the city, creative, sustainable, and safe traffic calming solutions can be developed for the entire community. Table 2-1 (Page 19) lists the different types of traffic calming devices and the pros and cons associated with each.

General Objectives of Traffic Calming Measures

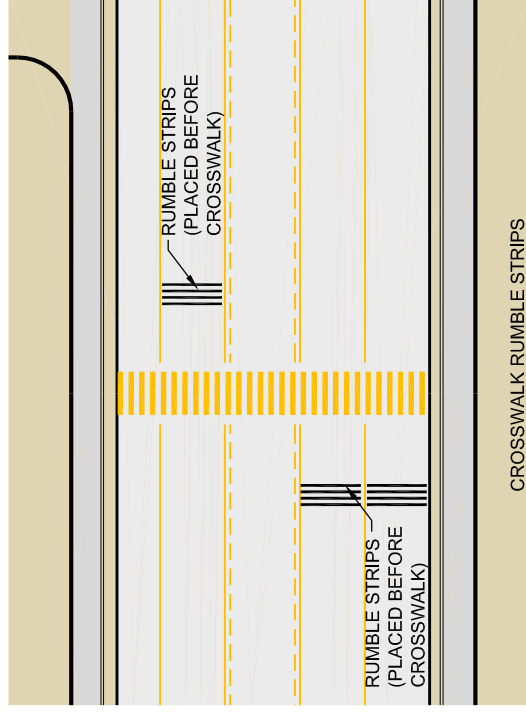
- To improve safety for all users of the streets
- To promote safe and pleasant conditions for motorists, bicyclists, pedestrians, and residents by reducing vehicular speeds
- To maintain the environment and livability of neighboring streets



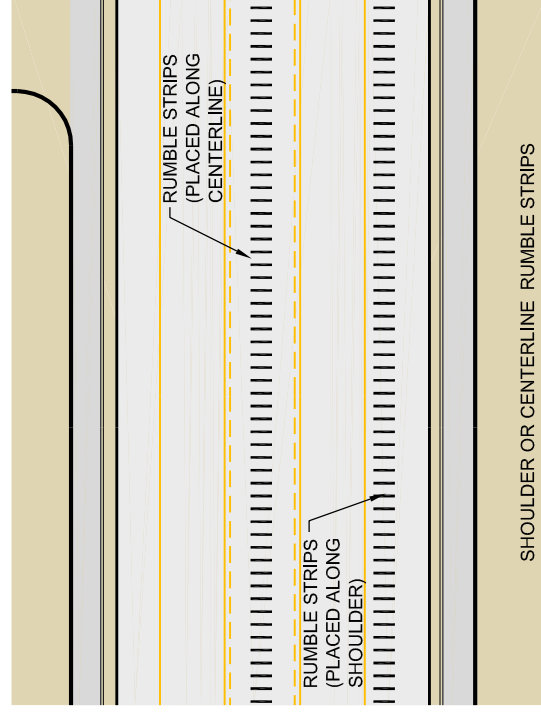
Crosswalk rumble strips are an effective alarm for drivers who are approaching a crosswalk or to alert drivers to dangerous or unexpected conditions. Rumble strips are indentations etched into the asphalt and can be used on local streets to reduce the speed of drivers. However, objections may be raised by local residents about the increase in noise. Speed reduction ranges from 0 to 15 miles per hour. Bicyclists may find the rumble strips objectionable. Rumble strips are not recommended on a bicycle route. Raised thermoplastic rumble strips are not recommended due to inevitable damage by snow plows.



Shoulder or center line rumble strips are grooves or rows placed perpendicular to the direction of travel to alert inattentive drivers. As a vehicle passes over the rumble strips, noise and vibration are produced alerting the driver they are approaching a hazard. They are intended to warn drivers they are entering a part of the roadway not intended for routine traffic use. Bicyclists may find the rumble strips objectionable. Rumble strips are not recommended on bicycle routes.



Estimated Cost: \$1.50 per LF

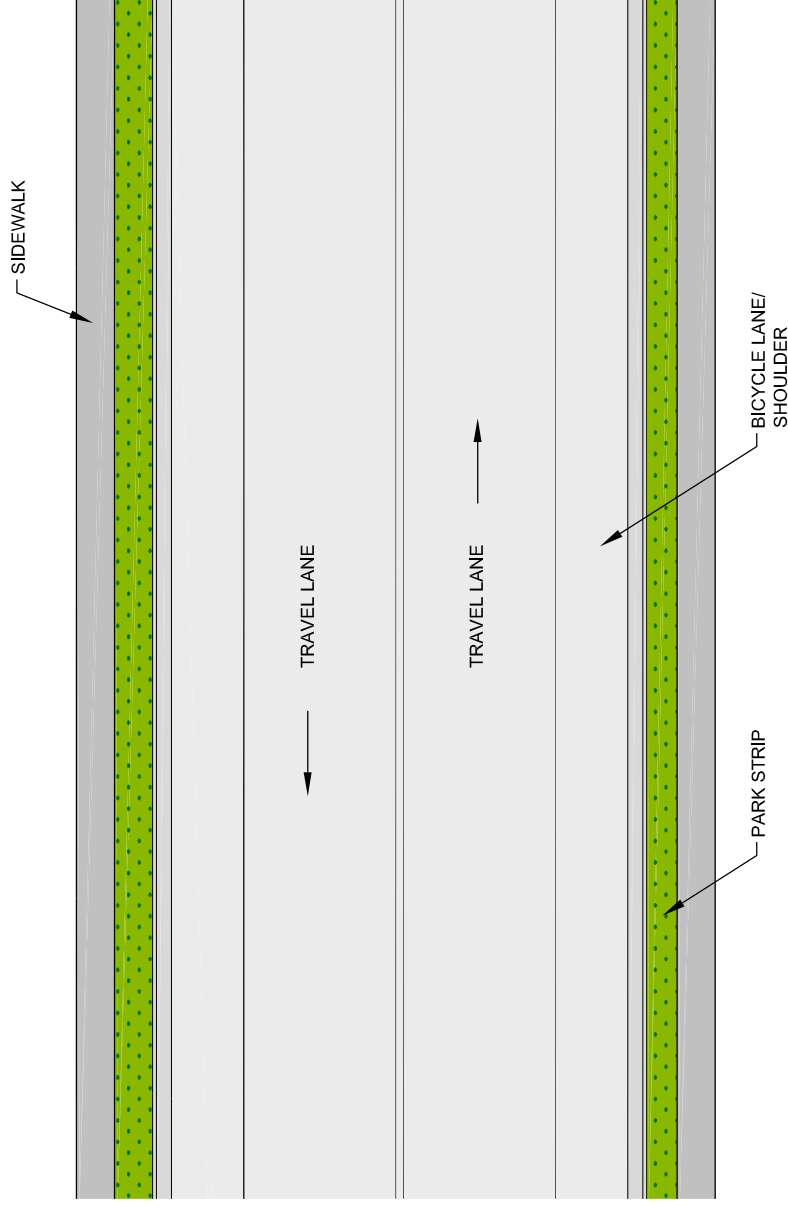




Striping a neighborhood street creates a psychological impact of restricting the travel path, thus reducing speeds. Striping is an inexpensive solution to some traffic problems. Re-striping larger roadways can be combined with additional options such as installing bicycle paths or safe walking zones for school children. One drawback is that they may make a local street look like a minor arterial road.

Estimated Cost: \$5.00 per LF

* Assuming 2 lines on a typical local road section. For additional lines add \$2 each.

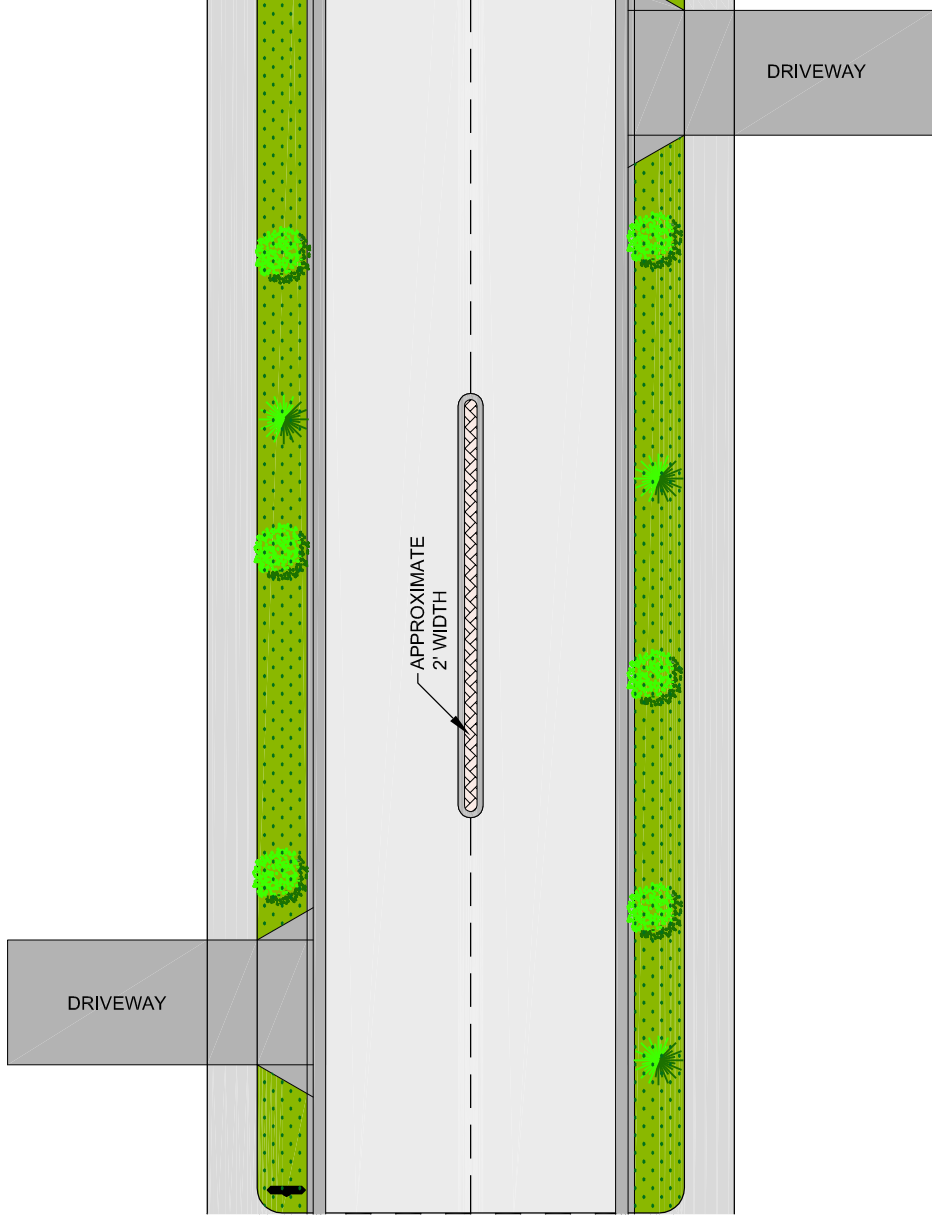


CURB WALL



A *curb wall* is a traffic calming measure on narrow streets to force traffic to maintain the intended path of travel thus reducing speeds and conflicts between opposing traffic flow. Proper placement of curb walls inhibits turning vehicles and provides pedestrians with refuge when crossing roadways. Typically placement of curb walls will be done so as not to interfere with the access to or from any private driveways. All curb walls are recommended to be about two feet wide and to be constructed of concrete. Improperly placed curb walls can impede snow plows and increase emergency vehicle response time.

Estimated Cost: \$50 per LF

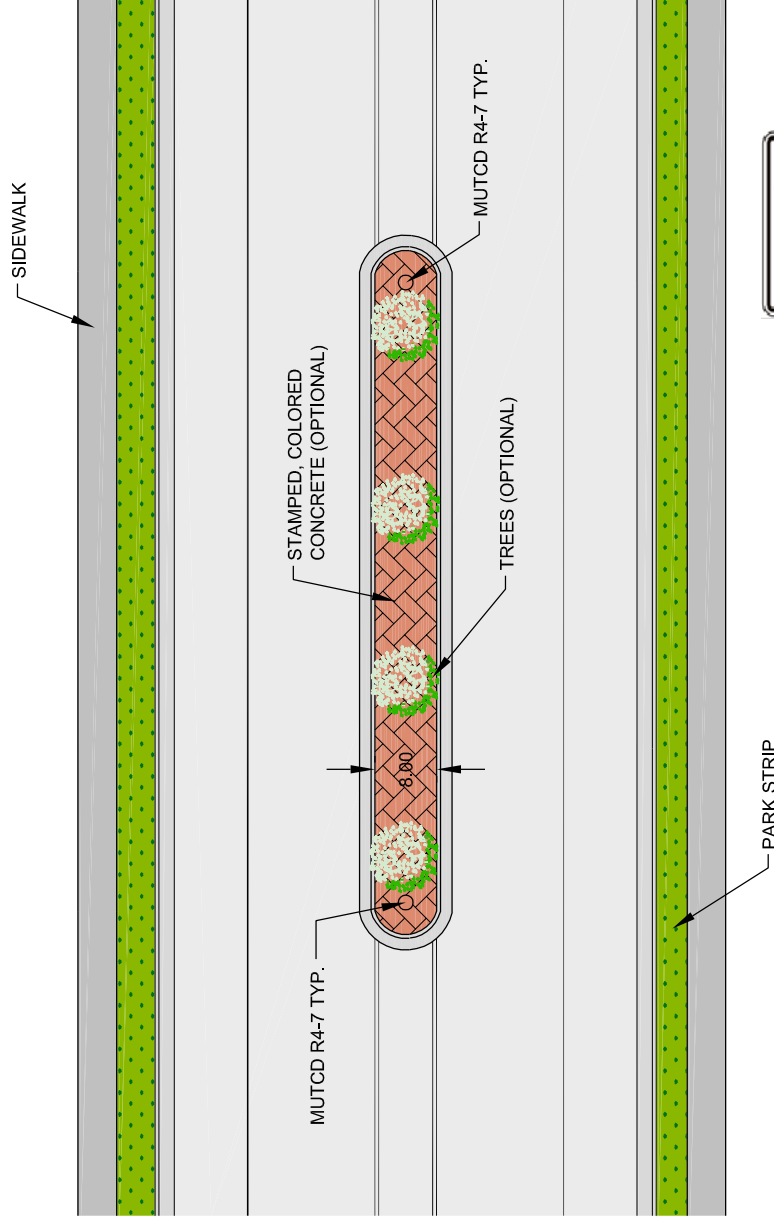
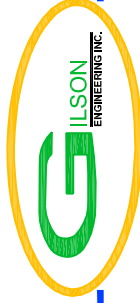




A *center island* is a traffic calming measure that uses the same principles as a curb wall but is designed for wider roadways. The center island is recommended to be approximately 8 feet wide and can be constructed of colored concrete or landscaped. Concrete ensures low maintenance. Landscaping and trees provide additional traffic calming, but have higher maintenance costs.

Estimated Cost: \$175 per LF

**Cost is for an 8' width. For other widths adjust cost ±\$20 per ft.*



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ELECTRONIC SPEED MONITOR

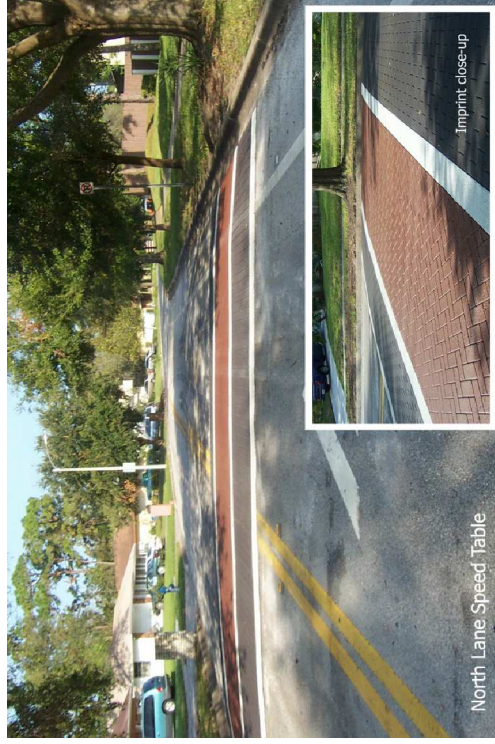


An *electronic speed monitor* is a traffic calming measure that is placed on roadways where motorist speeds are consistently higher than the posted traffic speed. Electronic monitors allow for more efficient use of law enforcement resources while providing a visual warning to motorists who are violating the posted speed limit. The signs can be powered by solar power and are inexpensive to operate. One disadvantage is the effectiveness of the electronic sign can diminish over long periods of time.

ESTIMATED COST: \$4,500

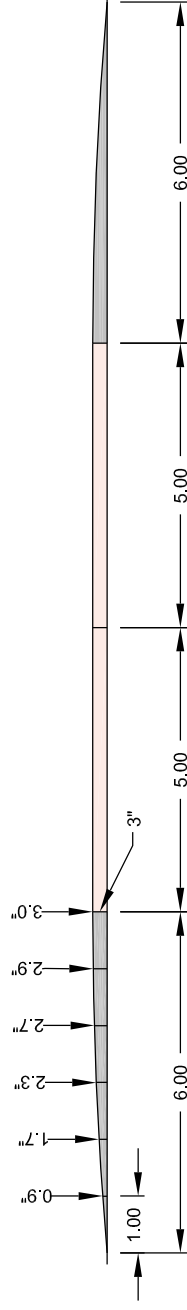
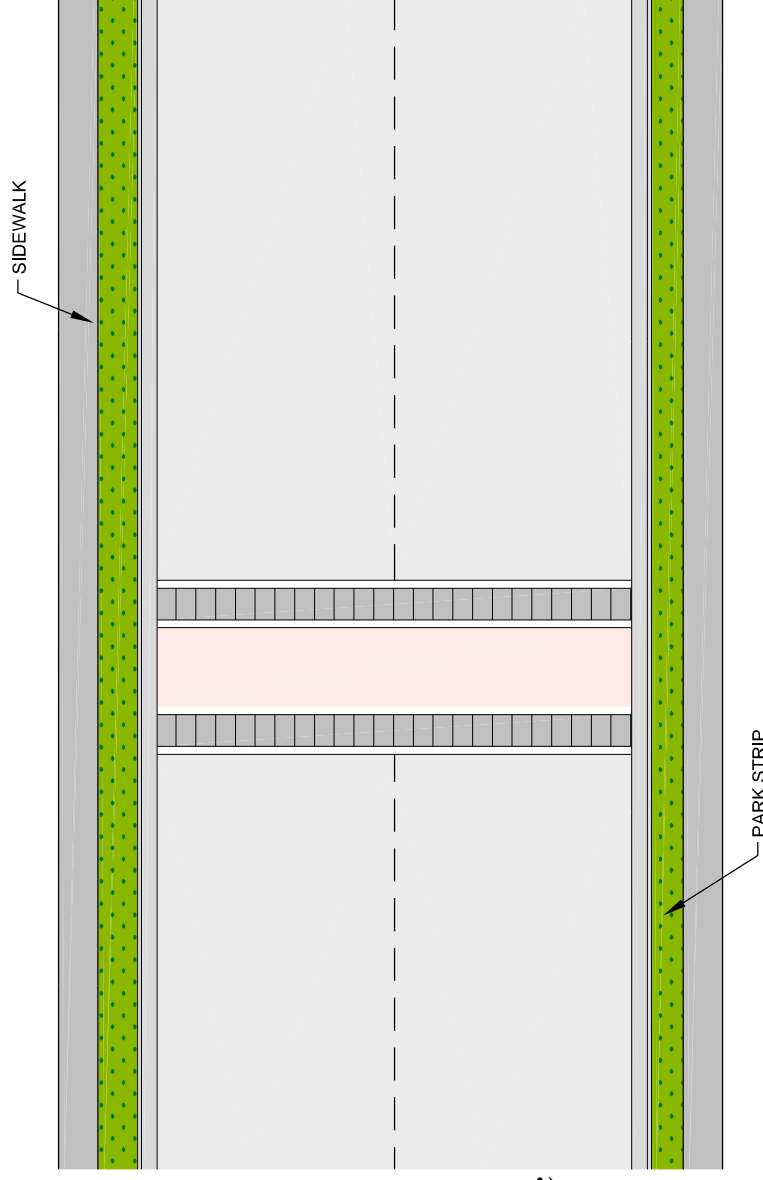
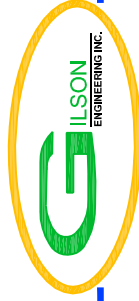


SPEED TABLE



A *speed table* is a raised section of roadway typically 3-inches in height and 22 feet in length with a flat top 10 feet in length. They are used to control traffic speed while attempting to maintain an adequate level of comfort for the traveler. Speed tables are recommended to be constructed of concrete or strength stamped along the top surface being colored and stamped to increase aesthetic appeal. The disadvantages of a speed table include an increase in emergency vehicle response time and conflicts with snow removal.

Estimated Cost: \$10,000



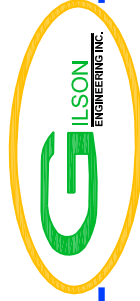
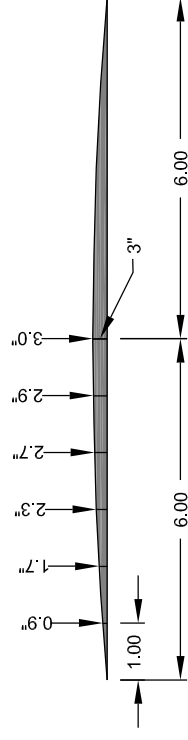
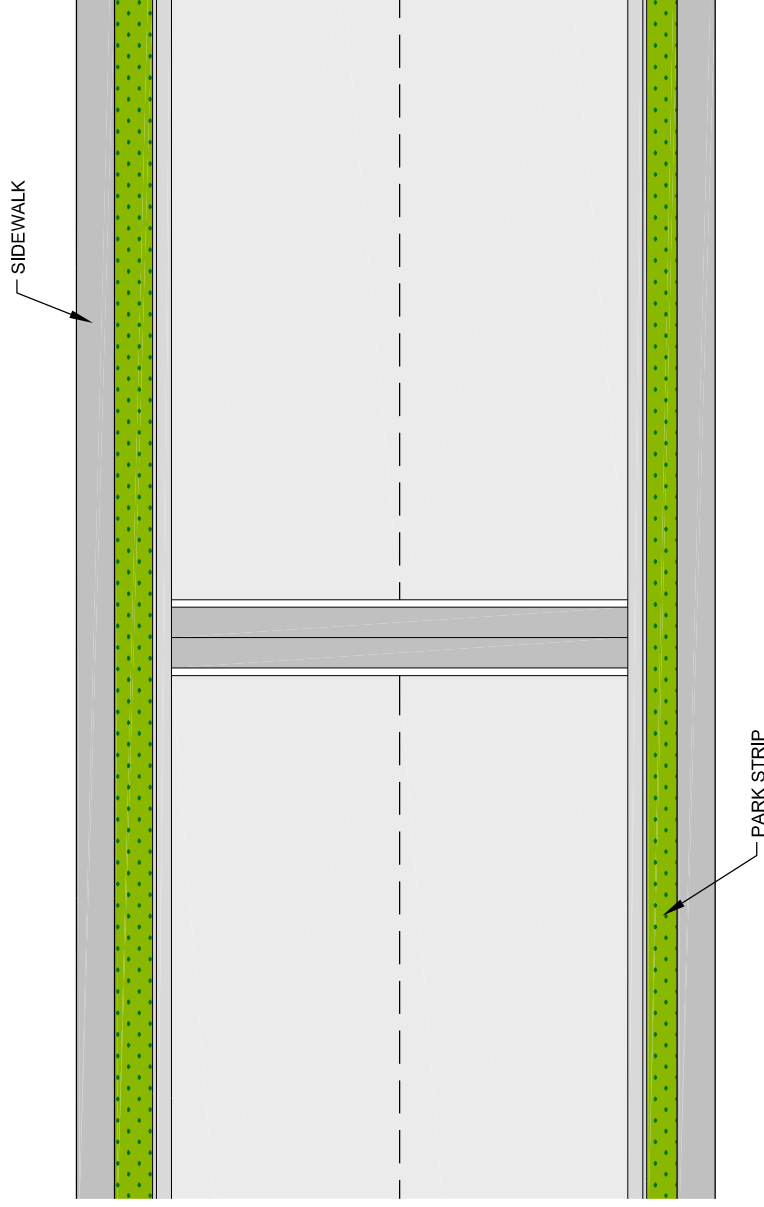


SPEED HUMP



Speed humps are vertical measures that are generally used to reduce vehicular speed and cut-through traffic. While speed tables are flat in shape, speed humps are raised sections that are usually parabolic in shape. While speed humps do tend to reduce speed and cut-through traffic, they also tend to increase emergency vehicle response time and create conflicts with snow removal.

Estimated Cost: \$4,500 each



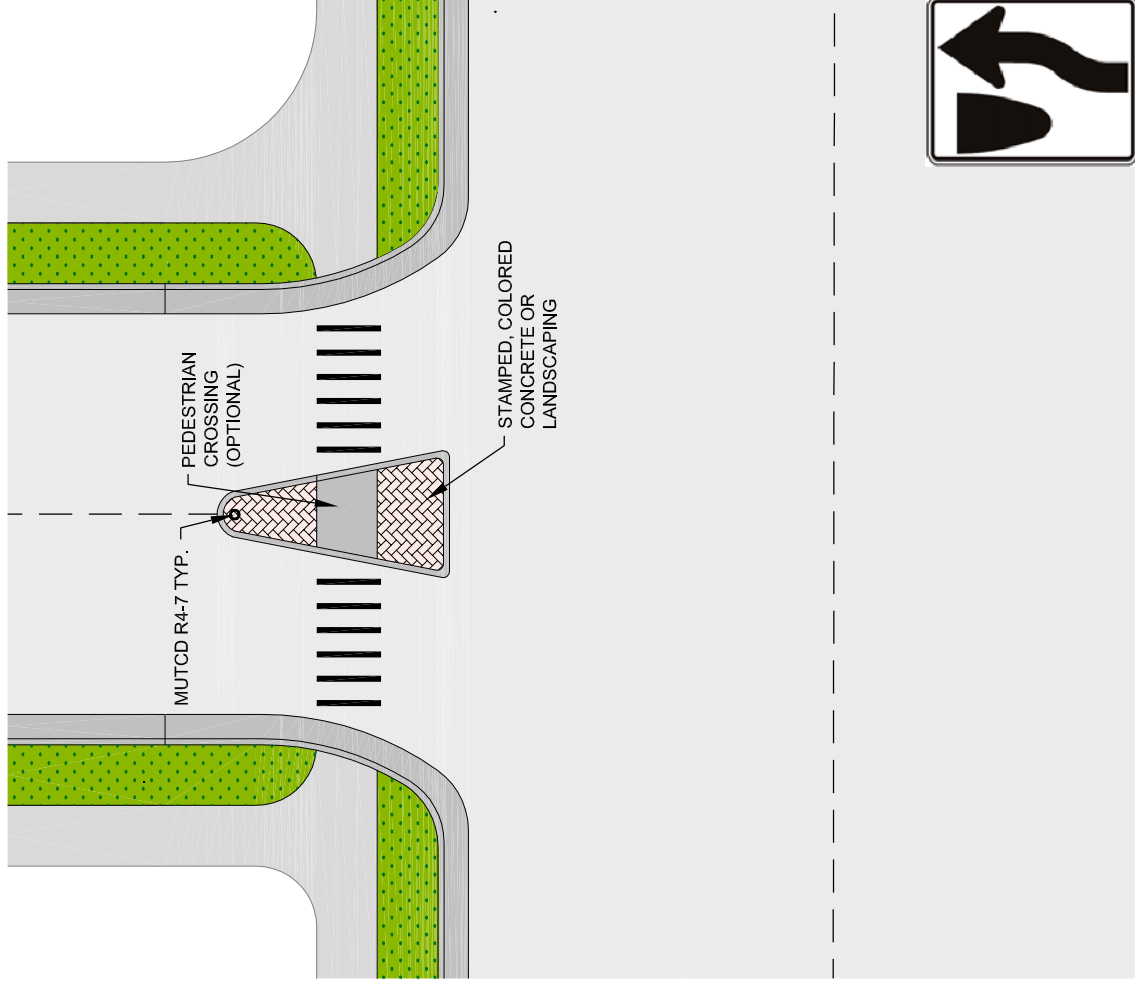


ISLAND DIVERTER



An *island diverter* is a traffic calming measure that is placed at the entrance of a roadway to confine travelers to the correct lane of travel while entering a roadway. Island diverters will decrease speed of traffic entering a roadway and lessen the risk of conflict between opposing traffic. Island diverters can reduce effectiveness of snow plows and improper location can increase emergency response time.

Estimated Cost: \$4,500 Each



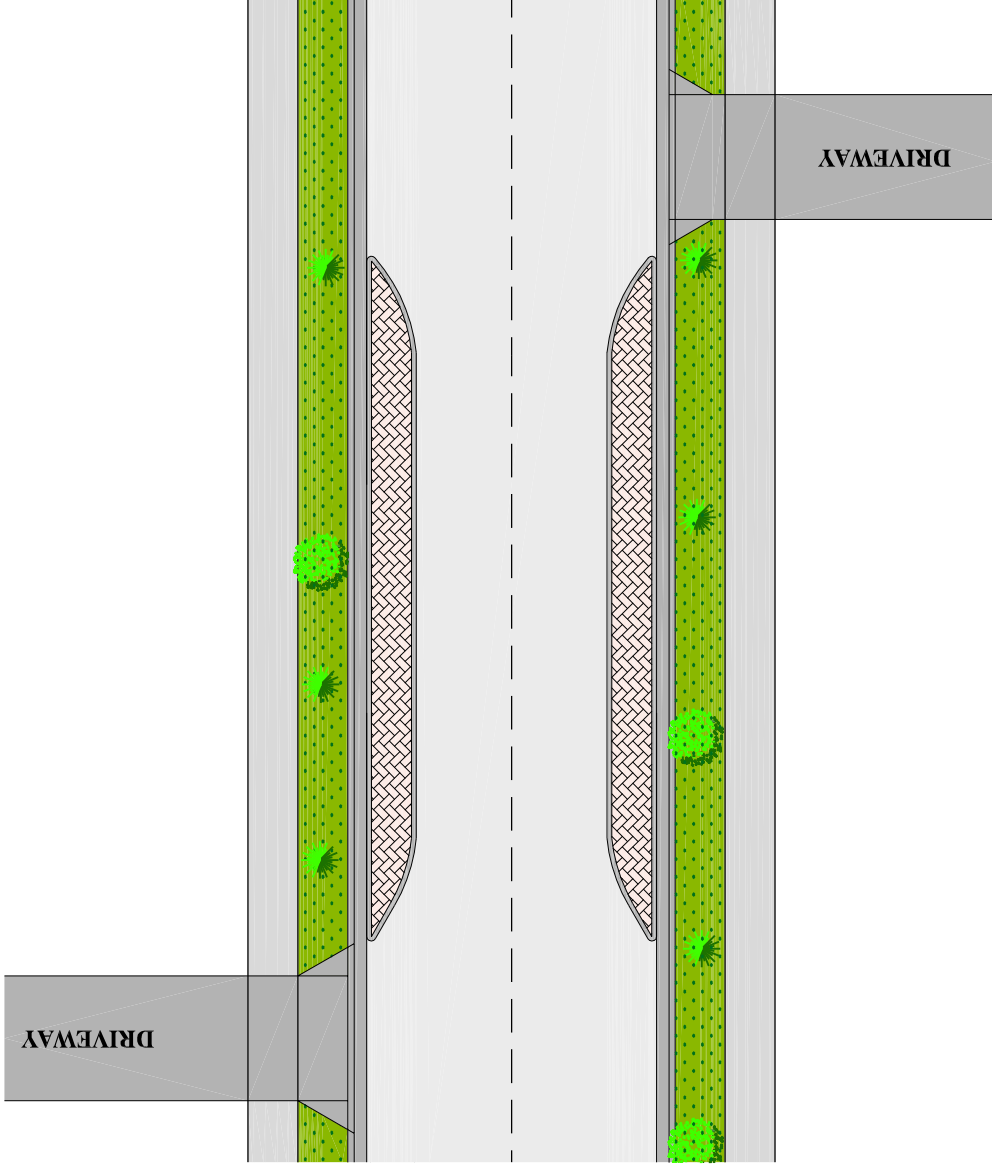
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NECK DOWN(CHOKER)



A *neckdown (choker)* is a traffic calming measure intended to decrease traffic speed while still allowing straight through travel. This is achieved by narrowing the roadway causing the driver to reduce speed to achieve safe passage. A main application of this measure is to improve pedestrian safety by decreasing the street crossing distance. As neckdowns are typically applied at intersections, they tend to reduce the turning speed of vehicles at these locations. One disadvantage is that they reduce available parking on the roadway.

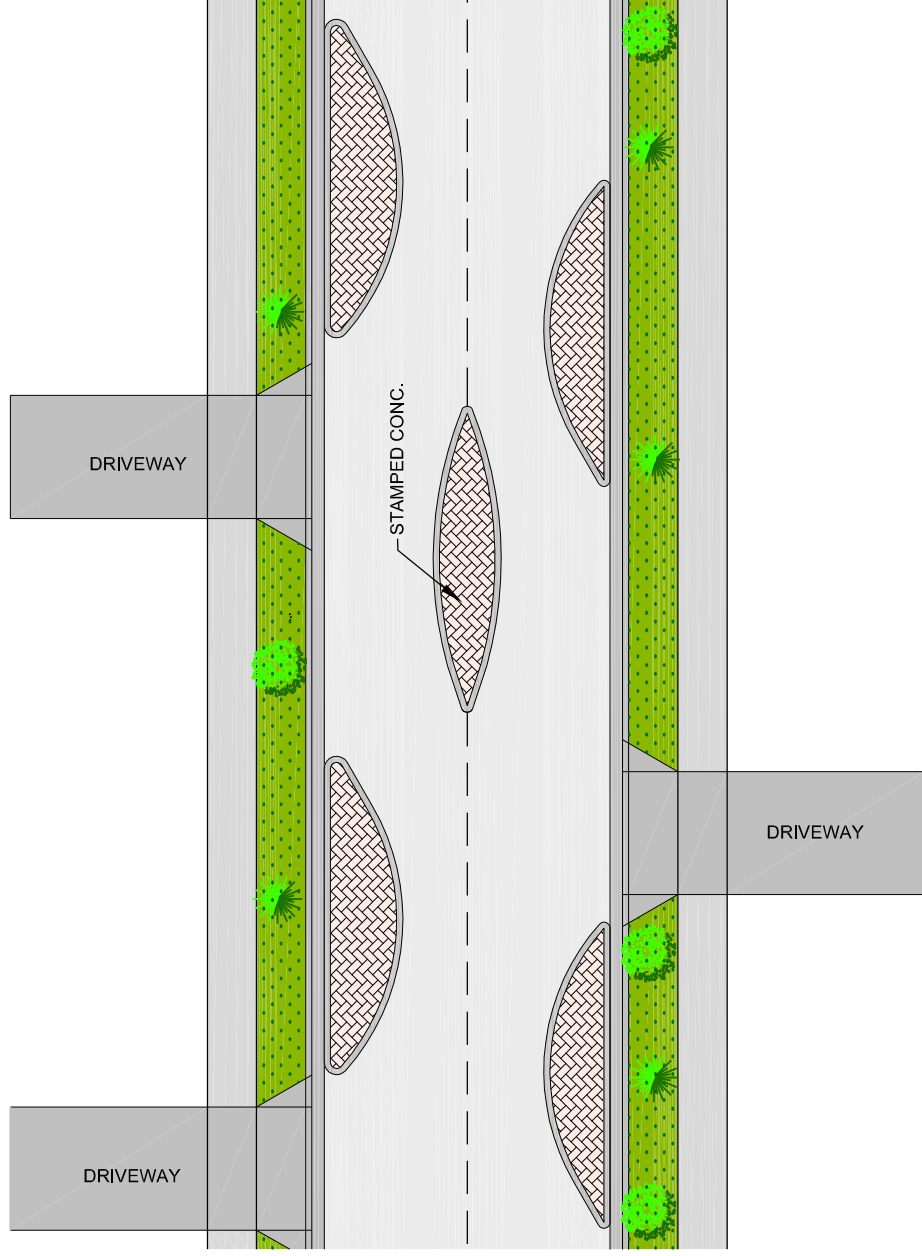
Estimated Cost: \$7,000 - \$10,000 per pair





A *chicane* takes a relatively straight roadway section and creates an S-shaped path. The increased meandering of the roadway decreases the speed at which travelers can comfortably negotiate the roadway. This traffic calming measure may also help shorten pedestrian crossing distances, allow unabated access of emergency vehicles and protect parking bays. However, they tend to have higher maintenance costs due to landscaping, may be a factor in head on collisions and can potentially contribute to drainage problems.

Estimated Cost: \$13,500 per pair

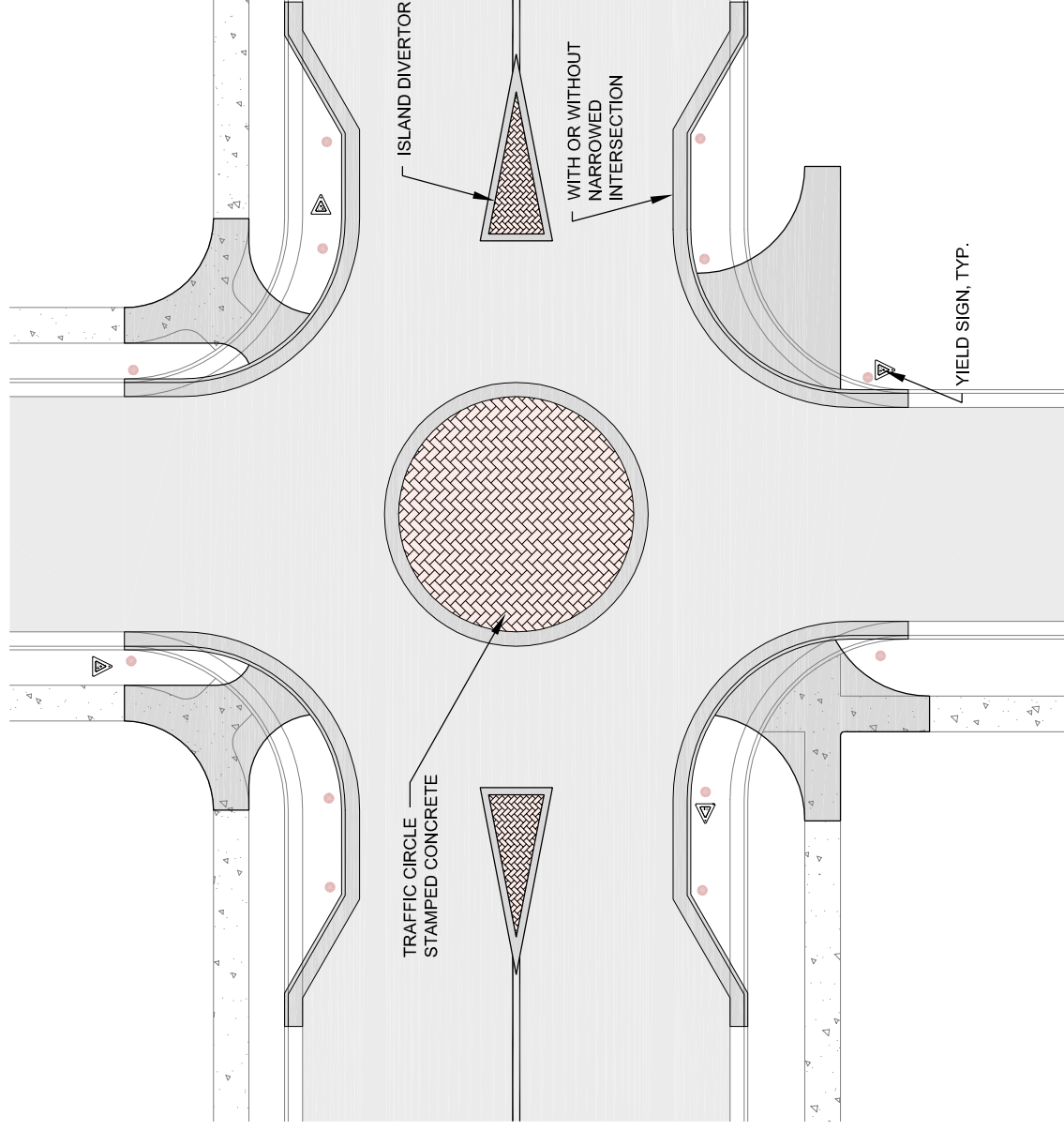


TRAFFIC CIRCLE



A *traffic circle* is a raised island in the middle of an intersection that forces travelers to decrease speed to safely maneuver in a counter-clockwise position. Yield signs have been incorporated with the traffic circles to eliminate unnecessary acceleration and deceleration of vehicles. Allowing constant flow has environmental and noise benefits for the surrounding neighborhood. The combination of a neckdown on all four corners of the intersection will increase the effectiveness of the traffic circle as a traffic calming measure. Some of the negative aspects of traffic circles are driver unfamiliarity (yielding to the oncoming vehicle on the left), and vehicles may encroach on pedestrian crosswalks and bicycle travel lanes.

Estimated Cost: \$25,000 - \$30,000 (not including neckdown)

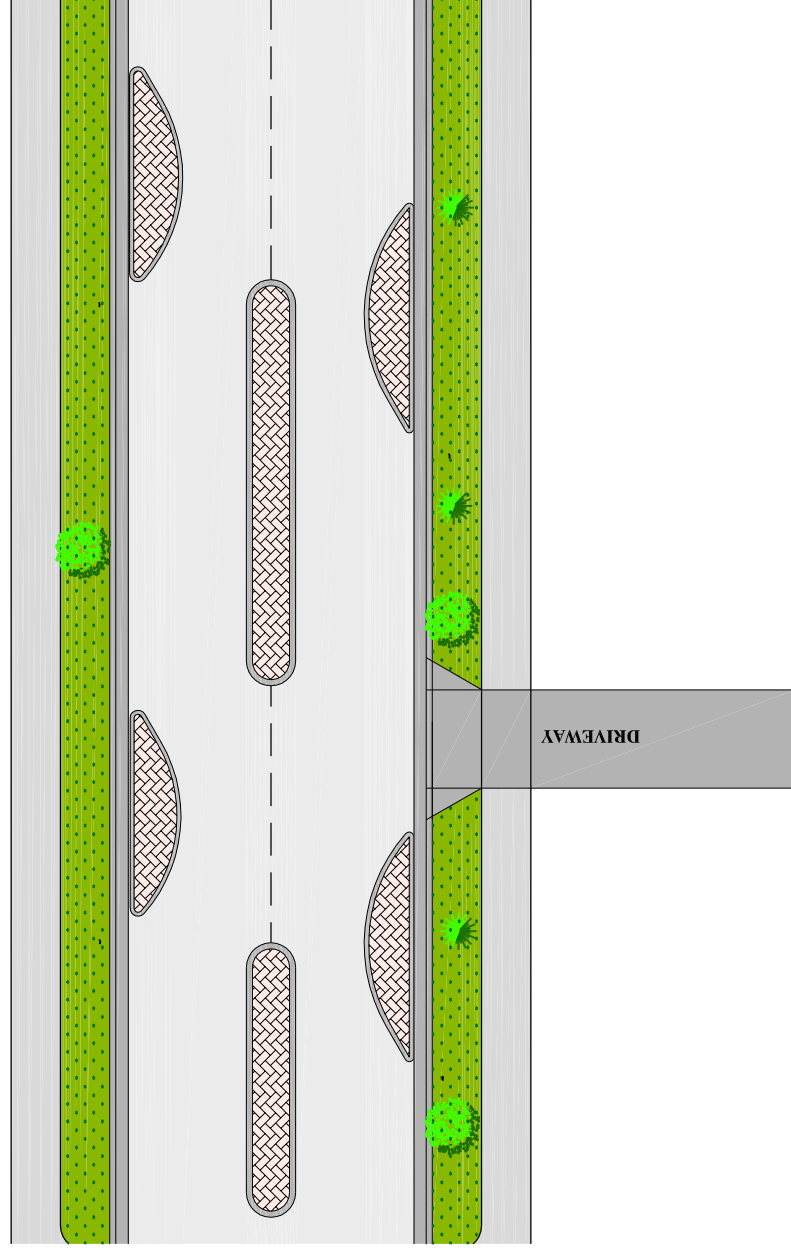


COMBINED MEASURES



Traffic calming measures can be used in conjunction with one another to achieve the desired traffic control while staying within the limits of the roadway. Center islands and curb walls incorporated into the designs of chicanes and neckdowns greatly increase the efficiency of the traffic calming measure. Incorporating road narrowing measures at speed tables also is a good example of an increased effect when combinations of traffic calming measures are used.

Estimated Cost: Varies



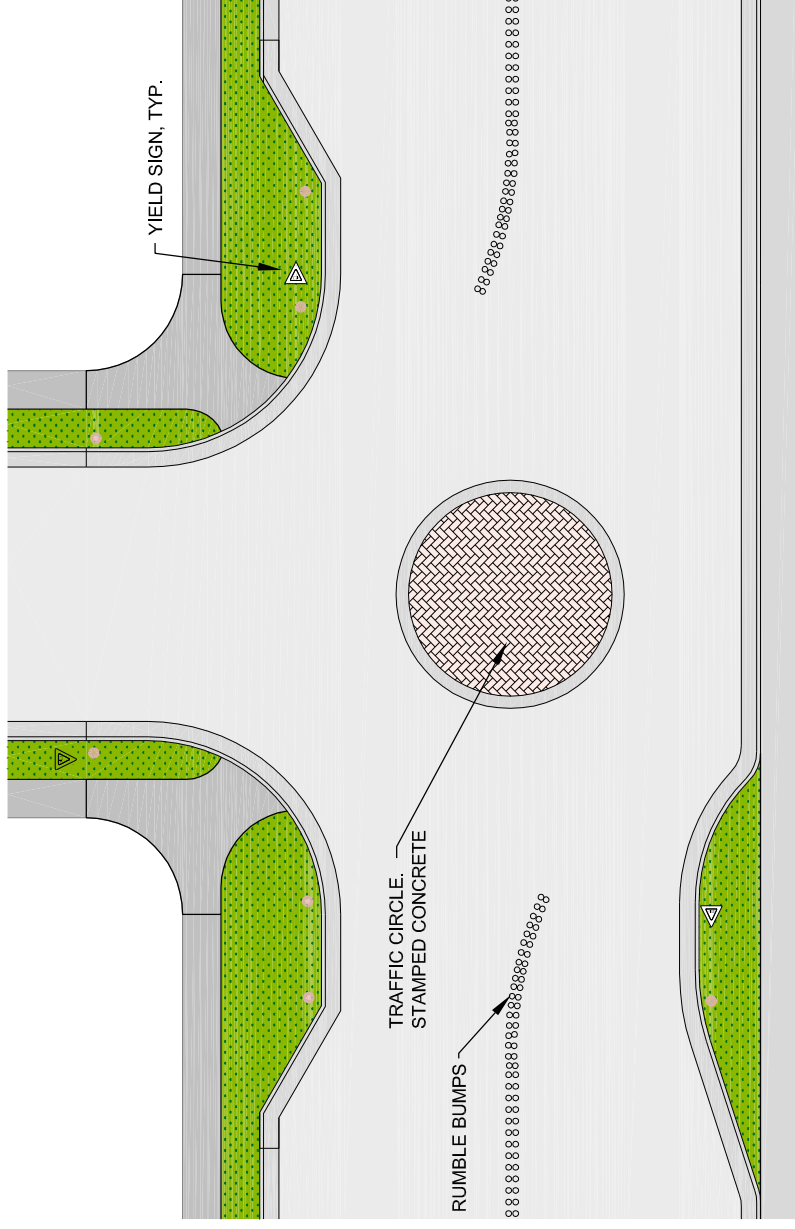


REALIGNED INTERSECTION



A *realigned intersection* is a traffic calming measure to slow traffic through a three way tee intersection without requiring traffic to come to a complete stop if not needed. The combination of a traffic circle and curb line realignment creates a curved path of travel decreasing the speed at which travelers feel comfortable maneuvering. Yield signs are also recommended for this intersection to maintain a constant traffic flow.

Estimated Cost: \$45,000 - \$60,000



REGULATORY SIGNS



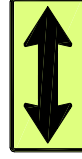
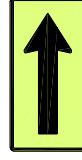








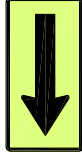
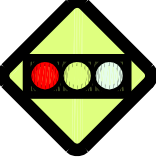









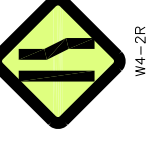




































































































































































































































































































 S5-1	 S2-1	 W1-7	 W1-6R	 W13-1	 NS15MPH	 X4-11	 W14-1pR	 W14-1pL
 S5-1	 S1-1	 W11-2	 W1-6L	 W1-5L	 W2-4	 W1-5R	 W1-5R	 W1-5R
 S5-2	 S3-1	 W11A-2	 W1-8R	 W8-5	 W4-2R	 W1-2R	 W1-2R	 W1-2R
 R7-5	 D1-3	 W11A-2	 OM-3R	 W11-8	 W5-2	 W10-X2	 W1-1L	 W1-1R
 R7-201	 RADAR	 R7-6	 R3-16A	 R3-2	 R12-1	 R2-1	 W3-2a	 R3-7R
 R7-11	 R7-10	 R7-1L	 R7-Varies	 R3-4	 R5-3	 R4-7b	 R1-2	 R1-1
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 R7-1R	 R7-1R	 R7-1L	 R7-Varies	 R3-4	 R5-3	 R4-7b	 R1-2	 R1-1
 R7-1R	 R7-1R	 R7-1L	 R7-Varies	 R3-4	 R5-3	 R4-7b	 R1-2	 R1-1
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 R7-1R	 R7-1R	 R7-1L	 R7-Varies	 R3-4	 R5-3	 R4-7b	 R1-2	 R1-1
 R7-1R	 R7-1R	 R7-1L	 R7-Varies	 R3-4	 R5-3	 R4-7b	 R1-2	 R1-1
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 R7-1R	 R7-1R	 R7-1L	 R7-Varies	 R3-4	 R5-3	 R4-7b	 R1-2	 R1-1
 R7-1R	 R7-1R	 R7-1L	 R7-Varies	 R3-4	 R5-3	 R4-7b	 R1-2	 R1-1
 R7-1R	 R7-1R	 R7-1L	 R7-Varies	 R3-4	 R5-3	 R4-7b	 R1-2	 R1-1
 R7-1R								

Table 2-1 – Types of Traffic Calming Devices

Traffic Calming Measure	Pros	Cons
Rumble Strips <i>Approx. cost: \$1.50 per linear foot</i>	<ul style="list-style-type: none"> Slows vehicle traffic Effective alarm for motorists leaving the roadway Increases pedestrian safety 	<ul style="list-style-type: none"> Noise pollution is intrusive in neighborhoods Increases roadway maintenance cost
Striping <i>Approx. cost: \$5 per linear foot</i>	<ul style="list-style-type: none"> Minimal emergency response problems Gives the appearance of space restriction resulting in reduction of speed Less Expensive 	<ul style="list-style-type: none"> Speed reduction is optional Only effective on high volume residential roads Can make residential road look like a minor collector road
Curb Wall <i>Approx. cost: \$50 per linear foot</i>	<ul style="list-style-type: none"> Forces vehicles to remain in lane during turns Slows turning vehicles Provides pedestrians with refuge when crossing 	<ul style="list-style-type: none"> Can impede snow plowing Can impede truck traffic and emergency vehicles when not designed correctly
Center Island <i>Approx. cost: \$ 175 per linear foot</i>	<ul style="list-style-type: none"> Forces vehicles to remain in lane during turns Slows turning vehicles Provides pedestrians with refuge when crossing 	<ul style="list-style-type: none"> Can impede snow plowing Can impede truck traffic and emergency vehicles when not designed correctly
Electronic Speed Monitors <i>Approx. cost: \$4,500</i>	<ul style="list-style-type: none"> Slows vehicle traffic Efficient use of police time 	<ul style="list-style-type: none"> Effectiveness decreases with time Speed reduction is optional
Speed Table / Speed Humps <i>Approx. cost: \$10,000 / \$4,500 each</i>	<ul style="list-style-type: none"> Reduces speed No parking removal No bicycle restrictions 	<ul style="list-style-type: none"> Excessive acceleration and deceleration Air and noise pollution Slows emergency vehicles
Island Diverter <i>Approx. cost: \$ 4,500 each</i>	<ul style="list-style-type: none"> Forces vehicles to remain in lane during turns Slows turning vehicles Provides pedestrians with refuge when crossing 	<ul style="list-style-type: none"> Can impede snow plowing Can impede truck traffic and emergency vehicles when not designed correctly
Neckdown or Choker <i>Approx. cost: \$7,000 – \$10,000 each</i>	<ul style="list-style-type: none"> Reduces speed Minimal emergency response problems Constant traffic speeds Visually attractive 	<ul style="list-style-type: none"> More expensive Loss of parking Maintenance if landscaped
Chicane <i>Approx. cost: \$ 13,500 per pair</i>	<ul style="list-style-type: none"> Reduces speed Minimal emergency response problems Constant traffic speeds Visually attractive 	<ul style="list-style-type: none"> More expensive Loss of parking Maintenance if landscaped
Traffic Circle <i>Approx. cost: \$ 25000 - 30,000 each</i>	<ul style="list-style-type: none"> Reduces speed Improves left hand turn safety issues Visually attractive Constant traffic speeds 	<ul style="list-style-type: none"> Can restrict large vehicles if landscaped Can cause bicycle/motorist conflicts at intersection Can be confusing for some drivers Maintenance if landscaped
Combined Measures <i>Approx. cost: varies</i>	<ul style="list-style-type: none"> Design to specific needs 	<ul style="list-style-type: none"> May be confusing for some drivers
Realigned Intersection <i>Approx. cost: \$45,000 – \$60,000 each</i>	<ul style="list-style-type: none"> Reduces speed Improves left hand turn safety issues Visually attractive Constant traffic speeds 	<ul style="list-style-type: none"> Can restrict large vehicles if landscaped Can cause bicycle/motorist conflicts at intersection Can be confusing for some drivers Maintenance if landscaped

Section 3 – Route Modification

In contrast to the traditional traffic calming methods, which attempt to modify driver behavior, the traffic calming measures in this section attempt to alter the routes available to traffic flow. Route modification is considered a drastic measure where a severe traffic problem exists under the most egregious circumstances. Only after extensive review and approval from the city engineer can route modification be considered. The main goal of route modification is to reduce excessive cut through traffic. Route modification is an attempt to change traffic flow on the street network while more conventional traffic calming measures attempt to alter driver behavior.

Half Street Closures

This measure is used to reduce traffic volumes by blocking travel in one direction on streets that usually permit travel in both directions. Half closures may be implemented at both intersections and midblock locations. These closures however, tend to be less effective than full closures due to the fact that motorists are more likely to violate the closures since it may only extend a short distance.



Full Street Closures

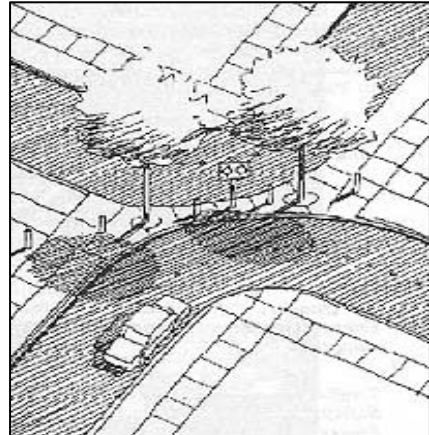
A full street closure completely closes the street to through traffic and is primarily used to eliminate cut-through traffic. A full street closure is not in the best interest of the community at large. Cottonwood Heights believes that connectivity between neighborhoods is essential to preserving the community atmosphere. When a full street closure is necessary, a variety of measures could be used, such as islands, walls, gates, or side-by-side bollards.



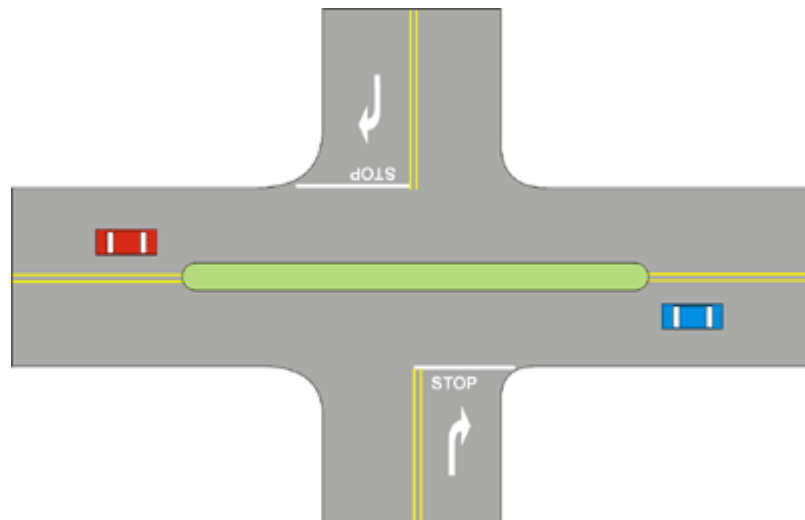
Some of the main concerns associated with street closures are an increase in emergency response time, a decrease in the capacity of the roadway, elimination of connectivity of roadways, and the diversion of traffic to other routes. Full or partial street closures are a drastic measure that would rarely be considered unless severe safety factors demand a closure.

Diagonal Diverters and Median Barriers

Diagonal diverters are placed across an intersection in order to block the through movements of traffic. Median barriers are positioned at an intersection to impede the through movement from cross street traffic. By impeding the through movements, these routes become less attractive, and therefore, the traffic volume on these roads will be reduced. The main concern with these types of traffic calming measures is the potential for increased volume on parallel streets.



Diagonal Diverter



Median Barrier

Section 4 – Traffic Calming Policy

Cottonwood Heights has developed a traffic calming implementation procedure that is designed to help city residents understand the process that will occur when a traffic complaint is made to the city. Traffic problems will be divided into two distinct categories; problems considered as minor will enter the rapid response process, and major assessment problems will follow the study based procedure.

The city will evaluate the traffic problem after the resident has reviewed this booklet and obtained support from their neighbors. The city engineer will assess the magnitude of the problem and determine whether to initiate a traffic study. A flow chart is included at the end of this section outlining the traffic calming process from identification to implementation.

Traffic problems will be identified as either minor or major based on a case by case analysis. Every traffic situation has its own circumstances and will be evaluated on its own merits. Traffic problems assessed as minor will be fast-tracked into a rapid process that involves the neighborhood and the city engineer. The engineer will perform an on-site inspection of the problem area and make an assessment of the situation. A neighborhood meeting will be held and an agreement will be reached in a timely manner.

Traffic problems that are assessed as major will undergo a study based response. The process is lengthier than a rapid response and will require a traffic study and a presentation to the city council. The engineer will perform an onsite inspection and will conduct the traffic study to determine the average daily traffic with speed counts. Accident history of the problem area will be considered as will the cost to implement any traffic calming devices. A written assessment of options will be presented to local residents and an agreement will be reached with approval of the city council.

An application is included at the end of this section that is intended to aid city officials in assessing the severity of the traffic problem. This application is to be completed by the residents impacted. Included is a section for signatures from neighbors who support the initiation of a traffic calming procedure.

Particular attention should be paid to the implementation process to ensure that each step is followed. This procedure promotes citizen involvement, which can translate into a greater acceptance by those individuals affected in the project vicinity. Through this process, the city council can also more objectively evaluate whether traffic calming should be applied to a particular location and can prioritize potential projects.

Traffic Calming Procedure Summary

1. Resident identifies traffic problem
2. Resident coordinates with city officials to request additional traffic enforcement from police department (2-3 months)
3. Resident completes a formal application (included in manual on page 25) for traffic calming consideration
 - a. Ensure 75% of affected residents sign application (affected residents must be neighbors living on street with the traffic problem)
 - b. Adequately describe the traffic problem
 - c. File with Cottonwood Heights Deputy City Manager
4. City engineer does initial research and classifies as minor or major
5. If minor classification – resident works with city staff to achieve solution. Process could take 4-6 months from filing of request to resolution
6. If major classification – traffic studies will be conducted, and the project will be prioritized by staff and city council. Resolution could require more than a year

COTTONWOOD HEIGHTS

TRAFFIC CALMING FLOW CHART

Identification



Investigation



Evaluation



Coordination



Implementation

Minor Assessment

Request Increase
Enforcement



Receive
Preliminary
Assessment
Application

Study-Based Response

Preliminary
Assessment
of Conditions
(Staff Evaluation)

Rapid Response

Perform
On-Site
Inspection

Written
Assessment
of Options

Issue
Information
Packet

Obtain
Feedback From
Neighbors

Obtain
Consensus

Agreement
and
Implementation

No
Change
Warranted

Neighborhood
Funding Measure

Meet with
Neighbors

Perform
On-Site
Inspection

Written
Assessment
of Options

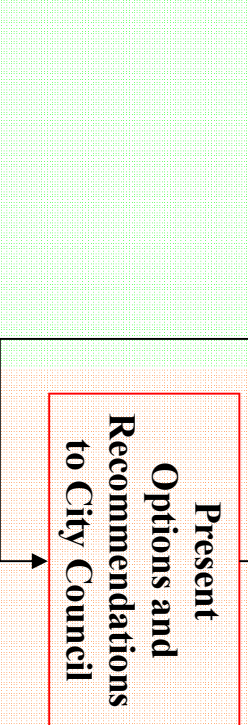
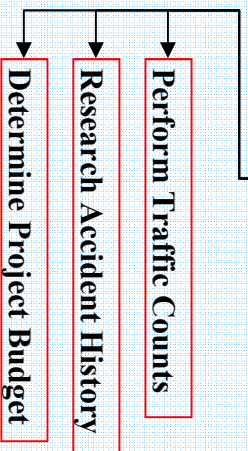
Perform Traffic Counts

Research Accident History

Determine Project Budget

Present
Options and
Recommendations
to City Council

Major Assessment



Application for Preliminary Assessment of Traffic Conditions

This application is designed to establish priorities for traffic calming implementation. The City of Cottonwood Heights emphasizes the need to mitigate the effects of traffic in local neighborhood areas and indicates that the city's traffic calming program will give priority to streets and neighborhoods where traffic impacts are the most serious. Please fill out application as detailed as possible, include input from residents who are affected by same traffic problem. In order to initiate the assessment of conditions, 75 % of all residents in the local neighborhood must recognize the traffic problem.

Name of Applicant: _____

Address: _____

Telephone Number: _____

1) Describe the location of the traffic problem(s) ?

2) Briefly describe the type of traffic problem(s) and any observations made by residents ?

3) Have you contacted law enforcement to request additional enforcement in your area ?

YES

NO

4) Having reviewed this manual, what types of traffic calming measures would you consider to be effective ?

5) Please describe any pedestrian safety issues? (i.e. lack of sidewalks, narrow streets, etc.)

5) Please describe any pedestrian safety issues? (i.e. lack of sidewalks, narrow streets, etc.)

6) Please include signatures of support from neighborhood residents.

	Name	Address	Support (Y/N)	Remarks
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

	Name	Address	Support (Y/N)	Remarks
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Section 5 – Additional Measures

Will Stop Signs Slow Traffic?

A stop sign is not considered a traffic calming device. When a stop sign is installed without the proper warrants, intentional violations of the stop sign will, in effect, increase the danger at the intersection. The Utah Department of Transportation has created industry standards to help municipalities determine where stop signs are warranted. These warrants include a combination of high speed and volume, restricted view, and serious accident records for the intersection.



Unwarranted stop signs usually create more problems than they solve. Many requests are received for stop signs to interrupt traffic or to slow speeding vehicles. However, studies show that there are a high number of intentional violations when stop signs are installed as nuisances or “speed-breakers.”

Unwarranted stop signs have actually been shown to increase speeds on streets as drivers try to make up for lost time at unnecessary stop signs. Unwarranted stop signs also increase air pollution, waste fuel, and create more traffic noise.

Under the right conditions stop signs can play an important role in traffic safety. Four way stops signs are helpful only when traffic is high and approximately equal on all four approaches. Even though most drivers are reasonable and prudent, when confronted with unreasonable and unnecessary restrictions they are more likely to violate them. This develops contempt for all traffic signs and decreases traffic safety.

Emergency Access

The city should consult with emergency services to determine the potential impact traffic calming measures on local emergency response routes. It is important to minimize the impact on the primary response routes; however, regarding the secondary response routes, the city council in consultation with emergency services should determine the ultimate traffic control plan.



Education

This alternative can be an effective way of reaching a target audience such as high school students. Traffic safety and safe driving can become a mandatory seminar topic that is introduced into the curriculum of the local school district. Educational seminars can also be offered to residents in the evenings to inform and explain the traffic calming strategies that are being introduced. These seminars can provide valuable information for residents showing them what they can do to aid efforts in slowing traffic.



Education with combined enforcement includes measures such as neighborhood speed watches and targeted police enforcement. A neighborhood speed watch records information about citizens found speeding. Police then send a notice to those individuals encouraging them to comply with the posted speed limit. Another strategy to promote compliance with the speed limit is randomly targeted police enforcement where police select a specific street and time of day on which to focus their enforcement efforts.

Neighborhood Watch Programs

Programs that encourage the participation of neighborhood residents can be very effective. Residents can volunteer and take an active role in the speed control of their neighborhood. Programs that can be effective include community newsletters with traffic calming information, neighborhood signs politely reminding people to slow down, and pace car programs (cars driving the posted speed limit) setting the speed of cars on the local street. These programs give residents an active role in the reduction of speed in their neighborhoods.



Landscaping

The use of landscaping can be used as a traffic calming measure. Landscaping can reduce the sight distance that motorists have while negotiating curves. This limited sight distance should cause motorists to reduce travel speeds. This method, however, is two fold. Landscaping that reduces sight distance can reduce speeds, but it may also increase risk. Proper placement and maintenance is a must with this alternative. An educational program is recommended to inform residents of the proper techniques that should be used.